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A Plan of
Hospital Development

The Middlesex Area
Connecticut

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Confidential Report

Submitted by:

JAMES A. HAMILTON ASSOCIATES

Hospital Consultants

Minneapolis 14, Minnesota

December, 1958

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BUILDING AND EQUIPMENT PLANNING • COMMUNITY SURVEYS • ADMINISTRATIVE SURVEYS • MANAGEMENT SERVICE

Main Office - December 1, 1958

Dr. G. Albert Hill, Chairman
Citizen's Hospital Needs Study Committee
Middletown, Connecticut

Dear Dr. Hill:

We submit herewith the report of our study of the hospital needs of the Middlesex area and a proposed plan for meeting those needs.

If, through this study and its recommendations, we have stimulated an awareness of the hospital needs of the area and have created for the people a vision of the possibilities at hand for intelligent community planning, then we have, in a measure, succeeded in accomplishing our task. The accompanying report contains a blueprint of hospital services which can produce, effectively and economically, better health care for all the people.

The task ahead will not necessarily be an easy one. Community forces are present which dictate change in the presently adopted pattern of care. Hence, increased effort will be required to achieve the desired goals. Herein lies the challenge and the opportunity. If, under the leadership of your committee, the people rise to match the demands of the situation and capture the occasion, they will provide themselves and their neighbors a better, healthier way of life with deep and lasting satisfaction.

We are pleased to have had a part in constructing the proposals for this long-range program of community endeavor. Each member of our study staff joins me in grateful acknowledgement of the willing cooperation and valuable assistance afforded us by you, members of your committee, members of the hospitals and professions, the community agencies, and vitally interested citizens.

Sincerely yours,


James A. Hamilton
For JAMES A. HAMILTON ASSOCIATES

lc

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C O N T E N T S

	<u>Page</u>
Letter of Transmittal	
Study Organization	
Table of Contents	
List of Tables	
Scope of Study	
<u>Part One - Highlights of the Plan</u>	1
I - The Area and Its Hospital Needs	1
II - Proposed Hospital Program	4
III - Summary of Recommendations	6
<u>Part Two - A Hospital Plan for the Area</u>	9
I - The Hospital Service Area	9
A - Definition	9
B - Brief General Description	10
C - Population	11
1 - Growth and Density	11
2 - Characteristics of the Population	13
D - Vital Statistics	14
1 - Births	14
2 - Deaths	14
3 - Summary Conclusion	15
E - Economy of the Area	15
F - Conclusion	16

CONTENTS (continued)

	<u>Page</u>
II - Basis of the Plan	17
A - General Concept	17
B - Estimated Bed Requirements, Beds Available, and Bed Shortages	19
1 - Summary - All Types of Care	19
2 - Acute General Care	21
3 - Psychiatric Care	24
4 - Chronic Illness (Long-term) Care	26
5 - Tuberculosis Care	30
6 - Other Types of Care	31
C - The Need for Outpatient Services	31
D - Educational Needs	32
III - A Plan to Meet the Described Needs	34
A - Introduction	34
B - Alternate Plans for General Hospital Development	36
1 - Description of Each Plan	36
2 - Summary Comparison of Alternate Plans	42
C - Proposed Expansion Program	46
1 - Acute General Care	46
2 - Other Types of Care	48
D - A Plan for Each Hospital	49
E - Estimated Capital Costs - Plan for the Immediate Future (by the year 1965)	56
F - Implementing the Plan	57
1 - Sources of Capital Funds	57
2 - Priorities of Construction	58
3 - Community Organization	59

CONTENTS (continued)

	<u>Page</u>
<u>Part Three - Comparison with Recommendations of the Connecticut State Plan</u>	61
I - Definition of the Area	61
II - Inventory of Existing Hospital Beds	61
A - Acute General Care	61
B - Psychiatric Care	62
C - Chronic Care	62
D - Tuberculosis Care	63
III - Hospital Bed Needs and Beds Proposed	63
A - Acute General Care	63
B - Psychiatric Care	64
C - Chronic Care	65
<u>Part Four - Appendix</u>	66
Summaries of Physical Plant Surveys	67
Supplementary Statistical Tables	73

LIST OF TABLES

<u>Table</u>		<u>Page</u>
I	Middlesex Area, Connecticut, Estimated Bed Requirements, Beds Available, and Shortages, by Type of Care - by Years	20
II	Middlesex Area, Connecticut, Proposed Bed Construction Plan, by Type of Care - by Hospital - by Years	50
III	Middlesex Area, Connecticut, Existing and Proposed Distribution of Acute General Beds, by Hospital - by Type of Medical Care - by Years	51
A-1	Middlesex Area, Connecticut, Actual and Estimated Population, Years 1900-1980	73
A-2	Middlesex County, Connecticut, Distribution of Population - by Age Groups, Years 1930, 1940, 1950	74
A-3	Middlesex County, Connecticut, Percentage Distribution of Population - by Age Groups, Comparison with Connecticut and the United States, Years 1930, 1940, 1950	75
A-4	Middlesex County, Connecticut, Distribution of Population - by Race and Sex, Years 1930, 1940, 1950	76
A-5	Middlesex County, Connecticut, Percentage Distribution of Population - by Race and Sex, Comparison with Connecticut and the United States, Year 1950	77
A-6	Middlesex County, Connecticut, Birth and Death Rates, Comparison with Connecticut and the United States, by Years	78

SCOPE OF STUDY

Awareness of continued and increasing shortages of hospital facilities in the face of rapid population growth in the Middlesex area, and the need for positive action to overcome them, led to the formation of the Citizens' Hospital Needs Study Committee, under whose sponsorship this survey was undertaken.

It was agreed the scope of study would be:

- 1 - A definition of the hospital area and a statement of the hospital needs of the area.
- 2 - A definition by quantity and by professional type of the needed hospital facilities after an evaluation of the factors of health, population, economic and social indices of the area.
- 3 - An interpretation of the recommendations for the area made by the Connecticut State Department of Health contained in the Connecticut State Plan for Construction of Hospitals and Medical Facilities.
- 4 - An outline and description of an integrated plan of hospital facilities and a long-range program to meet such needs, together with a plan for immediate action toward the accomplishment of the long-range program.
- 5 - An inventory of the existing hospital facilities and an appraisal of each institution in reference to its adequacy to provide for the future hospital needs in accordance with the proposed plan.
- 6 - A statement of the number and the professional type of hospital beds which should be constructed to meet any proposed expansion program and a general estimate of the approximate cost of construction.

SCOPE OF STUDY (continued)

- 7 - A general estimate of the approximate cost of any construction recommended in an immediate expansion program.
- 8 - A priority list of immediate construction projects.
- 9 - The preparation and interpretation of a report to serve as a guide in development of the planning and as an aid in the achievement of the adopted goals.

PART ONE

HIGHLIGHTS OF THE PLAN

PART ONE - HIGHLIGHTS OF THE PLAN

I - The Area and Its Hospital Needs

In recent years the Middlesex Hospital area has experienced significant population growth, due, undoubtedly, to its desirability as a residential and vacation area and to its increasing importance commercially and industrially. In 1950 (latest official census period) the actual population stood at 71,311. Based on current estimates of growth since that time, it now appears that the area's population will reach 93,500 by the year 1960, a gain of 31.1 per cent, compared to the 21.4 per cent increase which occurred in the 10-year period, 1940 to 1950. From all indications the rate of growth may well accelerate in the ensuing 10 years to 1970 so that a conservative estimate of population by that time would be 134,500 persons, or an increase of 43.9 per cent over the 1960 estimate. Continuing almost at the same pace, the area's population may well reach 190,000 persons by the year 1980. Even though the southern portion of the county apparently will grow at a faster rate in future years, it is anticipated that for the next 15 or 20 years at least 70 per cent of the population will remain concentrated in an area extending some 6 to 10 miles around the City of Middletown, the county seat, and currently the only hospital center in the area.

That the area's population is an aging one is reflected in the fact that the number of people over 45 years of age has increased some 42 per cent in the past 20 years or so. Of even greater significance, the amount of population over 65 has increased over 60 per cent in this same period. In the face of such a trend, the area will have to expect a need for added care for the longer term illnesses which occur in the later years of life. The study found no significant concentration of any minority group to require special consideration in hospital

planning.

Birth rates, which remained substantially below state and national averages between 1940 and 1950, have climbed to new highs in recent years and now approximate the state and national figures. Conversely, death rates, which were extremely high in the early part of the 1940-1950 decade, have in recent years declined to where they are approximately the same as the state and national figures. This points, of course, to a rather substantial increase in population in future years, if these trends continue, even if the in-migration from other areas and other parts of the country which has been occurring should decline.

The area appears to be making steady progress economically. Data published by Sales Management's Survey of Buying Power indicates that the net effective buying income per capita has increased approximately 20 per cent in the past five years, compared to a gain of only 13 per cent in the country as a whole. While manufacturing appears to be the dominant industry in the area, it is well diversified leading to stability of employment and income. To this must be added the valuable income produced each year by the vacation business, as well as the continued income, though small, of agriculture. Over-all, it would appear that the area has good prospects for continued growth and a sound and well-balanced economy.

With its splendid churches, fine school system (including an outstanding institution of higher learning), and its natural desirability for recreational activities, the Middlesex area appears to be a good place to live. From the foregoing, we believe it may be properly concluded that the people deserve, can appreciate, and should be able to support fully adequate facilities for hospital and health care.

Already experiencing some shortages of hospital facilities, the area can expect to be faced with substantial increased demands in the years ahead in

view of the anticipated growth of population. By the year 1965, shortages totalling 293 beds for all types of hospital care can be expected if no additional beds are added to the present supply. Of this number, 193 will be needed for acute general care, 38 for the short-term phases of psychiatric care, and 65 for the hospital phase of care of the chronically ill. By the year 1980, these shortages are expected, conservatively, to more than double, reaching 758 beds.

Obviously, then, this growing area is confronted with a task of considerable proportions if it is to keep abreast of its hospital needs in the future. To the end of helping it meet these anticipated demands in an orderly fashion, this study and its proposed program is directed.

II - Proposed Hospital Program

The program to meet the described needs should be long-range in character, with all construction planned accordingly, to assure satisfactory development of the hospitals with a minimum of future redesign and relocation. The first phase of expansion should be directed to the year 1965 in order that the hospitals will have adequate time for planning, fund raising, getting new facilities into operation, and to allow an interval of a few years before further expansion would have to be undertaken again.

To meet the needs by the year 1965, the program proposes the construction of a new Middlesex Hospital of 235 beds for acute general care at a new site. This new hospital would replace the 168 beds existing in the present Middlesex Hospital and provide 67 additional beds. The program further proposes the construction of a new 50-bed general hospital in the southern part of the county, probably in the Saybrook - Westbrook area. It is recommended that this new community hospital in the southern part of the county be operated as a branch of the Middlesex Memorial Hospital. Together, these two new hospitals would provide the 117 additional beds needed for acute general care by the year 1965 and would replace the 168 beds in the present Middlesex Hospital. The program then proposes that the usable portions of the existing hospital buildings at the present Middlesex Hospital site be remodeled and converted to a nursing home to provide approximately 120 beds for the care of the chronically ill. At today's prices, the estimated capital cost of this combined program of new construction and remodeling is estimated to be \$7,295,000. In addition, the program anticipates that by the year 1965, 10 additional beds for short-term psychiatric care may be made available at the Connecticut State Hospital and that 30 additional beds for the care of chronically ill patients may be provided in chronic hospitals located outside

of the area.

Between the years 1965 and 1980, the program proposes the provision of 525 new beds, of which 39 will be beds from the 1965 program to be replaced, and of additional facilities to expand ancillary services and educational services as needed. Of the additional beds to be provided in these future years, it is anticipated that 75 may be beds for care of the chronically ill, located in chronic hospitals outside of the area.

Meeting these described needs adequately and in time will require significant effort on the part of all concerned. No one segment of the community can be expected or should have to bear the entire burden. Therefore, we are proposing that there be joint effort between private endeavor and government to secure the necessary funds (including the use of federal funds as they may be available under the Hill-Burton program).

As an aid to further implementing the recommended plan, we have suggested that there be established a coordinating body, organized as a nonprofit group, which could assist the hospitals and the communities to (1) raise necessary funds, (2) carry on a program of public education, and (3) secure the best coordination of hospital activities possible.

III - Summary of Recommendations

For the convenient reference of those concerned, we present here a summary of the major recommendations which have been made in the following sections of the report.

We recommend:

General Recommendations

- 1 - That the program adopted be long-range in character, and that all construction be planned keeping in mind the needs by the year 1980.
- 2 - That the immediate expansion program be sufficient to meet the needs of the year 1965 to permit the area to build a few years ahead of its current needs.
- 3 - That any departure from the proposed program be proved a justifiable one before it is accepted.
- 4 - That no new professionally specialized hospitals, such as maternity, pediatric, or the like, be established within the area.
- 5 - That there be close coordination between hospitals and, wherever practical, joint use of services so as to secure all capital and operating economy possible.
- 6 - That, by the year 1965, there be provided in the area in new construction and in remodeled facilities 285 new acute general hospital beds (including 168 replacements) and 120 nursing home beds for care of the chronically ill at an estimated cost of \$7,295,000 for the total combined program.

- 7 - That, between the years 1965 and 1980, there be constructed additional facilities in the area to provide 450 new beds (including 39 beds replaced), as follows: 290 for acute general care, 110 for psychiatric care, and 50 for chronic care.
- 8 - That existing outpatient services be expanded as needed, and that consideration be given to establishing, in the long-range future, new programs for psychiatric care and for home care of the chronically ill.

Individual Hospital Recommendations

- 9 - That there be no expansion of Crescent Street Hospital by the year 1965.
- 10 - That if Crescent Street Hospital discontinues operation between the years 1965 and 1980, as anticipated, its 29 beds be assigned as replacements to the expansion program of Middlesex Memorial Hospital.
- 11 - That there be no expansion of Elmcrest Manor by the year 1965.
- 12 - That, between the years 1965 and 1980, Elmcrest Manor construct a new hospital unit of 75 beds for psychiatric care, of which 25 will be expected to serve residents of the Middlesex area.
- 13 - That, by the year 1965, Middlesex Memorial Hospital construct a new unit of 235 beds, all for acute general care, at a new site and that usable portions of its present hospital building be remodeled to provide approximately 120 beds for nursing home care of the chronically ill.
- 14 - That, between the years 1965 and 1980, Middlesex Memorial Hospital construct additional facilities to provide 300 new beds (215 acute general, 35 psychiatric, and 50 chronic) and to expand ancillary services as needed. Of the new acute general beds to be added, 29 will replace existing beds at Crescent Street Hospital, expected to discontinue operation during this period of time.

- 15 - That, by the year 1965, a New Community Hospital of 50 beds, all for acute general care, be constructed in the southern part of the county, probably in the Saybrook-Westbrook area.
- 16 - That this New Community Hospital be operated as a branch of Middlesex Memorial Hospital.
- 17 - That, between the years 1965 and 1980, this New Community Hospital construct additional facilities to provide 75 new additional beds, all for acute general care, and to expand ancillary services as needed.

Recommendations for Implementation of the Plan

- 18 - That private endeavor and local government share in securing the necessary funds, augmented by federal funds as they may be available under the Hill-Burton program.
- 19 - That the raising of capital funds to meet the needs throughout the period of this program be done at periodic intervals to prevent too great a burden of fund raising occurring at any one time.
- 20 - That consideration be given to the establishment of a voluntary coordinating body to assist the hospitals in implementing the proposed programs.
- 21 - That the primary objective of this coordinating body be to work for the proper development of hospitals in the area, so as to provide the highest quality of hospital care in the most efficient and economical manner possible.
- 22 - That the functions of the coordinating body be threefold, namely,
(1) fund raising, (2) public education, and (3) coordinating hospital activities, as described in detail in the body of the report.

PART TWO

A HOSPITAL PLAN FOR THE AREA

PART TWO - A HOSPITAL PLAN FOR THE AREA

I - The Hospital Service Area

A - Definition

To properly determine the size and character of any community's hospital needs, it is necessary first to define the area to be served.

Precise geographical boundaries cannot be established to reflect all human decisions involved in the selection of hospital care. For the most part, people do go to the nearest hospital suitable for the type of illness involved. Our many studies across the nation have documented this, time and again. At the same time, consideration must be given to the influence of other factors such as channels of transportation, natural barriers such as rivers, the drawing power of hospitals in other nearby areas, trading habits of the people, and the like.

Weighing all of these factors, we have concluded the service area, for the purpose of this study, is best defined as being all of Middlesex County and two fringe towns, Madison in New Haven County and Marlborough in Hartford County. From this area come 92 per cent of all patients treated in the local general hospitals. While this supports our definition of the service area, it should not be construed as implying this high proportion of the residents receive their care within the area. The study recognizes a considerable variation in a degree of use of these local hospitals by residents in various sections of the area. Data furnished by hospitals in other centers such as Hartford, New Haven, and New London indicate that from 10 to 40 per cent of the area's residents, hospitalized each year, are cared for in hospitals in such outside centers. Even so, we believe it

more practical to allow for this out-migration factor by adjusting bed and facility needs, rather than by trying to shrink or adjust the area boundaries to reflect an exact pattern of use.

In view of potential growth trends and natural barriers, consideration was given to subdividing the area into two hospital service areas if this could reflect more accurately future hospital habits of the people. After careful study, we concluded this was an impractical approach. Even though there may be new hospital facilities located elsewhere in the area than today, there would inevitably be too much overlapping of areas served by such individual hospitals to clearly separate them.

B - Brief General Description

Located in south central Connecticut, the area comprises 434 square miles characterized, for the most part, by heavily wooded rolling hills and valleys. Through this flows the Connecticut River, constituting a barrier to easy travel in some parts of the area in that the number of bridge crossings is limited.

The area enjoys a reasonably moderate year-round climate, free from the rigors of extreme temperature variations. This is especially true as one gets closer to the shoreline communities bordering on Long Island Sound. Because of this, many parts of the area are enjoying a steadily increasing reputation as a desirable vacation spot.

Middlesex County, which constitutes essentially all of the area, apparently is not a cohesive unit either geographically or politically. Highway transportation between the northern and southern parts of the county is poor and time consuming, especially during the period when there is a high influx of vacationers and heavily increased use of the roads. Politically, the 15 towns (or townships) into which the county is divided appear to be the

stronger governmental units, a pattern we understand exists throughout the state. Hence, the county is not the dominant governmental factor as is to be found in many parts of the country. Moreover, there seems to be further division of interests, in that the northern section is more industrial in character while parts of the central and southern sectors are more characteristically vacation areas. Undoubtedly, these factors have had considerable bearing on the sentiments and attitudes of the people toward hospital usage, and cannot therefore be passed over lightly in any consideration of future hospital development.

The principal city of the area is Middletown. It is the county seat of Middlesex County and currently the only hospital center in the area. Here is concentrated about half of the area's manufacturing employment, approximately 45 per cent of the total population and all of the existing general hospital facilities. It is located in the north central sector of the area, and is as much as an hour's driving time away from the rapidly growing southern part of the county. Middletown is located 15 miles south of Hartford and 24 miles northeast of New Haven, the state's two principal hospital centers.

C - Population

The keystone in determining an area's hospital requirements is the size and character of the population to be served.

1 - Growth and Density

From 1900 to 1940 the area's population grew steadily but very slowly, with the highest rate of increase (9.5 per cent) occurring between the years 1930 and 1940. In the ensuing 10 years, 1940 to 1950, it stepped up sharply to 21.4 per cent. During this period the total population gain of 12,591 was more than double the experience of any previous decade. Apparently this increased rate of growth is continuing at an even more

rapid pace, due, primarily, we understand, to a very significant in-migration of population which is occurring all over Connecticut as well as in the Middlesex area. From a total of 71,311 persons in 1950, it is now estimated that the area will grow to 93,500 persons by 1960, or a gain of 31.1 per cent for this 10-year interval compared to the 21.4 per cent gain for the previous decade.

As to the years ahead, the estimates of future population presented in this report are based on the most reliable data which could be obtained from agencies in the area and the state who have spent considerable time and effort in studying this situation. In light of present knowledge, it appears that the estimates will prove conservative. On the other hand, since the in-migration of population will continue to play such a dominant role in future growth, the estimates should be checked at fairly frequent intervals to determine if adjustments are necessary.

In the ensuing 10 years (1960 to 1970) it is estimated that the rate of growth will step up to nearly 44 per cent, producing a total population of approximately 134,500 by 1970. A continuance of this trend, at a slightly lower rate of increase, should bring the total population to approximately 190,000 persons by 1980.

Today, approximately 75 per cent of the area's total population is concentrated within a radius of 6 to 10 miles of Middletown, the present hospital center. Even though the southern portion of the county is apparently growing at a faster rate than is the northern sector, and may be expected to continue to do so, present indications are that the section immediately surrounding Middletown, described above, will still contain nearly two thirds of the total population by the year 1975 or 1980. Density of population within the area varies considerably, ranging from

23.3 persons per square mile in a rural portion of the west central sector to some 800 persons per square mile in the Middletown area. During our travels throughout the area, we noted that there are many sections which are still relatively sparsely settled, indicating plenty of room for future growth and development.

2 - Characteristics of the Population

Since 1930, the Middlesex area's population has aged substantially. (The year 1930 is the earliest period for which detailed data on age distribution of population by counties is available.) In 1930, 30.5 per cent of the area's residents were over 45 years of age. By 1950 this proportion stood at 33 per cent of the total. In terms of total numbers, the population over 45 years of age increased some 42 per cent in this 20-year interval.

The segment of the population over 65 years of age has been increasing even more rapidly. In 1930, 9.0 per cent of the total population was in this age group. By 1950, this had increased to 11.1 per cent. The total number of persons in this age bracket increased over 60 per cent during this 20-year period.

In 1950, the area's population over 45 years of age was only about 7 per cent higher than that of Connecticut, but nearly 16 per cent above the national proportion in this age group. The differences in population over 65 are even more marked. The area's proportion of population in this age group in 1950 was over 27 per cent higher than the state's, and some 35 per cent above the national figure. This continued and significant long-time trend of growing numbers of elderly persons in the total population cannot be overlooked in planning the hospital care programs. The implication of increasing need for added care of

longer-term illnesses, which develop in the later years of life, is clear.

Our study of racial and other characteristics of the population indicates nothing unusual which will special consideration in the future planning of hospital facilities in the area.

D - Vital Statistics

1 - Births

In the decade, 1940 to 1950, the area's average annual birth rate fluctuated from a low of 13.8 births per thousand of population in 1940 to a high of 22.1 per thousand in 1947. The total average birth rate for the entire 10-year period was 18.5 per thousand, lower than both the state and national averages of 20.0 and 21.6 per thousand, respectively.

Since then, the birth rate has risen gradually, reaching a new estimated high of 24.2 per thousand in 1957. For this latest 8-year period the total average birth rate in the area was 22.1 per thousand, almost the same as the state average of 22.4. While a comparable average is not currently available for the United States as a whole, the trends of national figures for the first six years in this decade would indicate that the area birth rate is still running below national averages.

Currently, about 99.6 per cent of the total area births each year occur in hospitals. It should be noted, however, that close to 15 per cent of these hospitalized births are taking place in hospitals outside of the area, emphasizing the point already made concerning the effect of hospitals in surrounding areas upon the local needs.

2 - Deaths

The area's annual average death rate dropped from an extremely high figure of 17.4 per thousand of population in 1940 to 9.4 per thousand in 1950. Actually, during the first two years of this decade the death

rate exceeded the birth rate. The total annual average for the 10-year period was 14.2 deaths per thousand of population, nearly 40 per cent higher than the state and national averages for this same 10-year interval.

Since 1950 the death rate has remained relatively constant at the lower figure, with the result that the total annual average for the 8-year period, 1950 through 1957, of 9.8 per thousand was only a little higher than the state average for this period and an expected national average based on estimated rates for earlier years in the decade.

3 - Summary Conclusion

The preceding analysis of vital data points to an increasing birth rate and an apparently stabilized average death rate among residents of the area. One significant implication in these trends is the probability of a substantial natural increase in population each year quite aside from any further influx of new people from other areas. This would be in sharp contrast to the experience of the early 1940's, when total deaths were exceeding total births. We believe this lends weight to the previously stated opinion regarding conservative population estimates for the future. It is apparent, too, that the proportion of births hospitalized each year has probably reached a maximum. Assuming the same gradual trend of increase in birth rates in the years ahead, reasonably accurate forecasts of needed obstetrical facilities should be possible from time to time during the course of future hospital development in the area.

E - Economy of the Area

The economic progress of the Middlesex area in the past 10 or 12 years is significant. Retail sales, now totalling close to \$100,000,000, are up over 120 per cent during this period. This is an average of over \$4,600 per family per year, which is well above the United States average.

According to the latest data published in Sales Management's Survey of Buying Power, the area's effective buying income per capita stands at \$1,995.

While this is lower than the state average, it is well above the national figure of \$1,734 for the same period. Furthermore, it is significant to note that so far as this effective buying income per capita is concerned, the area averages increased almost 20 per cent in the past five years, compared to a gain of approximately 17 per cent for Connecticut and almost 13 per cent for the United States,

Manufacturing currently accounts for some 46 per cent of the total employment and is the major producer of income. It is noted that the manufacturing industry is well diversified, so that this segment of the area's income producing activity is not dependent on any one particular industry.

Agriculture, though small by comparison with other activities in the area, continues to produce a substantial income and lends further stability to the economic picture. Important, also, in the area's economy is the vacation industry which is bringing in sizable income each year and which appears to be growing in importance.

From the foregoing, it would appear that the area has a very well-balanced economy and that its prospects for future development are bright.

F - Conclusion

Our review of the Middlesex area and its characteristics points to a rapidly growing community, due to its desirability as a residential and vacation land and to its increasing importance commercially and industrially. With its moderate climate, its natural beauty, and its desirability as a recreational area, one can only conclude it is a good place to live. It is our opinion, then, that the people of the area deserve, should appreciate, and should be able to afford fully adequate hospital and health care facilities.

II - Basis of the Plan

A - General Concept

Any usable estimate of an area's hospital requirements, and the development of a plan to meet them, should be based upon certain predetermined concepts.

We look upon the general hospital as the keystone in the area's future program of hospital and health care. As such, it should be concerned with the provision of beds and services for certain aspects of psychiatric and chronic illness care, as well as the customarily accepted acute general care. In short, then, we propose that the hospital plan developed in the area be centered around its general hospital.

To meet the area's hospital needs in the most effective manner the plan should be long-range in character, based upon the needs of the year 1980, and all construction should be planned with that goal in mind. Too often in the past, hospitals across the nation have been designed and constructed with insufficient thought given to their possible future requirements and growth; thus, subsequent expansion of their facilities, when needed, often became more costly and difficult than might otherwise have been necessary. Some of the existing hospital facilities in the Middlesex area are no exception in this regard. Hence, too much emphasis cannot be placed on the wisdom of long-range planning, now, to provide hospital units which can be developed and operated more effectively and economically at less capital investment in the years ahead.

The future development of hospitals in the area should, by all means, be planned so as to confine the program to as few units as possible, consistent with the indicated need. Costs of hospital care, like other costs,

have risen steadily and rapidly in recent years. Even though many people have the assistance of various prepayment plans, they find it increasingly difficult to pay the costs of hospital care. The complexities of modern medicine demand many expensive services which can prove unduly costly if they are spread out in too many smaller hospitals vying for the same patient volume. Thus, any overlapping and unnecessary duplication of an area's hospital facilities and/or services, which can otherwise be reasonably avoided, represent a needless waste of the people's economic resources.

We counsel strongly against the future development of professionally specialized hospital facilities in the area, such as those for maternity or pediatric care. While such hospitals have been conceded to serve better the needs of complicated cases requiring specialty care, and to offer better educational and research opportunities, they have proven in most instances to be weak because of their continued dependence upon general hospitals to supplement certain technical phases of their program of care, or otherwise in their unnecessary and extravagant duplication of this supplemental care.

The year 1965 has been selected for the first period in the immediate future for which recommendations concerning additional hospital facilities should be made. Even if the planning of these facilities began tomorrow, it is doubtful that their construction could be completed in time to put them into operation much before 1961. Moreover, it is not reasonable to expect hospitals to expand every year or so, and major capital fund-raising effort at too frequent intervals usually is unwise and impractical. Hence, at the time of expansion, the additional facilities should be sufficiently large to meet the needs for a few years beyond the time when these facilities can be expected to get into operation.

We recognize that time and changing circumstances may alter, to some degree, the requirements as determined in this study. It is possible, too, that difficulties in financing hospital construction may delay the accomplishment of plans recommended for individual hospitals. For these reasons, no plan developed can be infallible, and changes or adjustments may become necessary from time to time. However, such changes, if required, should be proven a justifiable deviation from the adopted plan before they are accepted.

Even though hospitals may be physically separated, there are certain of their activities which can be coordinated and/or centralized with a resulting economy of operation, savings in capital investment, and other benefits to the participating units. As an illustration: Hospitals can share in centralized purchasing and bulk warehousing activities, in central laundry service, and, to a lesser degree, perhaps in some sharing of X-ray and laboratory services. Certainly, every consideration should be given these possibilities by those concerned with proposed plan.

B - Estimated Bed Requirements, Beds Available, and Bed Shortages

1 - Summary - All Types of Care

The accompanying Table I on the following page indicates by years and by type of care the estimated bed requirements, beds available, and shortages. Estimates of need are stated first for the year 1958 for perspective purposes only, and then for the years 1965 and 1980 for reasons previously described. It should be noted that in estimating these bed requirements, as well as bed shortages for chronic and psychiatric care, only certain phases of these types of care, primarily the active treatment and noncustodial aspects, have been included for reasons described later in the report. As regards existing hospital facilities, attention is drawn to the fact that not all beds in operation

TABLE I

Middlesex Area, Connecticut

ESTIMATED BED REQUIREMENTS, BEDS AVAILABLE, AND SHORTAGESBy Type of Care - By Years

<u>Type of Care</u>	<u>Year 1958</u>		<u>Year 1965</u>		<u>Year 1980</u>	
	<u>Number</u>	<u>Per 1,000 Population</u>	<u>Number</u>	<u>Per 1,000 Population</u>	<u>Number</u>	<u>Per 1,000 Population</u>
<u>Bed Requirements:</u>						
Acute General	240	2.73	314	2.80	575	3.02
Psychiatric (Short-term)	45	0.51	65	0.58	140	0.74
Chronic (Hospital Phase Only)	60	0.68	100	0.89	190	1.00
Total	345	3.92	479	4.27	905	4.76
<u>Beds Available:</u>						
Acute General	197	2.24	121 ^{a/}	1.08	92 ^{a/}	0.48
Psychiatric (Short-term)	30 ^{b/}	0.34	30 ^{b/}	0.27	20 ^{a/b/}	0.11
Chronic (Hospital Phase Only)	35 ^{c/}	0.40	35 ^{c/}	0.31	35 ^{c/}	0.18
Total	262	2.98	186	1.66	147	0.77
<u>Shortages:</u>						
Acute General	43	0.49	193	1.72	483	2.54
Psychiatric (Short-term)	15	0.17	35	0.31	120	0.63
Chronic (Hospital Phase Only)	25	0.28	65	0.58	155	0.82
Total	83	0.94	293	2.61	758	3.99

a/ Excludes beds anticipated to be replaced for reasons described in the report.b/ Only those beds estimated to be serving area residents are included here.c/ These are beds located in chronic hospitals outside the area but estimated to be serving area residents.

today are expected to be available to meet the needs by the year 1965 and the year 1980. During the course of the survey, it was found that some of the area's hospital facilities are housed in physical plants, or sections of physical plants, which are below fire-hazard standard and/or are outmoded, and therefore should definitely be replaced in any program of expansion undertaken. Consequently, the number of beds indicated as being available in future years omits them.

It may be noted, from the figures included in Table I, that current bed shortages are not too extensive in relation to total supply. However, they can be expected to multiply rapidly in the years ahead, due to the increased demands of a growing population. Conservatively, the area will have to provide over three times the number of beds it now has available, during the period of the proposed program, if it is to make the necessary replacements and to keep abreast of the additional new needs accruing.

A more detailed analysis of the needs and shortages by each type of care follows.

2 - Acute General Care

a - Bed Requirements

Over a period of years a number of methods have been used to determine bed needs for acute general care. More frequently, these have been predetermined ratios of beds per thousand of population, the development of needs based on existing and anticipated volumes of service to be rendered, and a more recently developed birth-death formula (established nationally by the Commission on Hospital Care). While each of these has been considered in this study, the final determination of need represents a composite application of the several methods described, adjusted to reflect certain other factors pertinent

to the Middlesex area. The impact of the influx of visitors during the summer months has been recognized and taken into account. While these people will not use local hospitals to the same degree as do area residents (many on short vacation and require only emergency hospitalization), allowances do have to be made for their possible hospitalization. Consideration has also been given to the degree to which patients may still continue to go out of the area for their hospital care. It is expected that in the future the numbers of such patients will decline proportionately as area hospital facilities increase in size and ability to provide service competitive with larger hospital centers, and possibly as a better distribution of hospital facilities within the area occurs. Offsetting factors to be taken into account in the total measurement of need are a probable increase in emphasis on outpatient care in the years ahead, the possibility of further changes in medical and hospital practices which may result in some further reduction in average length of stay, and a slightly higher degree of utilization to be achieved as hospitals in the area increase in size, and can therefore maintain higher occupancy levels.

As a result of our study, we find that the Middlesex area will require 314 beds for acute general care by the year 1965, or a ratio of approximately 2.80 beds per thousand of population. It will be noted that this represents a slightly higher ratio of beds to population than is estimated needed today, anticipating some slight reversal of the trend of outward-migration of patients from the area. By the year 1980, the need for acute general beds in the area is expected to reach 575, a ratio of 3.02 beds per thousand of population.

The increased ratio of need by that time recognizes not only the previously described factors which can lead to some reduction in demand, but anticipates also that at this point the area will be supplying essentially all of its own needs except for those cases with the highest degree of complicated illness, which can be expected to continue to seek their care in the larger medical centers such as Hartford and New Haven.

b - Available Beds and Shortages

The Middlesex area has today 197 beds for acute general care located in two existing general hospitals, both in Middletown and in the northern sector of the area. Approximately 85 per cent of the total beds available are housed in one hospital, the Middlesex Memorial, which is operated as a nonprofit community venture. The remaining beds are located in a small, privately-owned institution.

Current utilization of the facilities at Middlesex Memorial Hospital appears to be very high. Over-all average bed occupancy, for the latest 12 months for which data was available at the time of the survey, is running close to 86 per cent of capacity. Medical and surgical beds were being operated at nearly 90 per cent of capacity, obstetrical beds at 72 per cent of capacity, and pediatric beds at 84 per cent of capacity. The average length of stay of all patients during this period was 6.5 days, with medical and surgical patients staying on the average about 7.7 days, obstetrical patients 4.5 days, and pediatric patients 4.7 days.

Of the 197 existing beds for acute general care, we consider that at least 76 should be replaced by the year 1965, and that an additional 29 would probably be replaced some time between the years

1965 and 1980. Reasons for proposing that these beds be replaced are described in detail in the following section of the report, which sets forth a plan for each hospital. Thus, if these beds are excluded from the total supply (by the respective dates indicated), and no new beds were added, the area could expect shortages of at least 193 acute general beds by 1965 and 483 by the year 1980.

3 - Psychiatric Care

a - Bed Requirements

Properly, the chief concern of this study as regards psychiatric care is with the bed requirements for short-term, noncustodial care. Responsibility for providing long-term custodial facilities for such care is already being well met by the state in the Connecticut State Hospital, and there is every reason to expect that it will continue to be so met. Furthermore, this phase of psychiatric care is not one with which other hospitals in the area should be concerned, except possibly a specialized institution such as Elmcrest Manor. Therefore, we do not feel that any consideration of need for long-term custodial facilities here would serve a useful purpose. Even more important than this, however, we stress the need for short-term care because we believe that its ready availability offers the greatest opportunity for early diagnosis and treatment. Here, the emphasis is placed on preventive practices. Herein lies the hope for reducing, materially, the number of people who must be committed to special institutions for custodial care. General hospitals in the area should share, with the state, the responsibility for providing beds for such service. We believe they should do this for two reasons. First, this added service enables them to offer a more comprehensive program of care,

and so better serve the needs of their patients and their medical staffs. Secondly, and more important, a psychiatric service, properly organized and operated as part of a general hospital program, can do much to help remove the stigma which, unfortunately, is still often associated with mental illnesses.

No general rule of proved merit is known to exist by which a division can properly be made between bed requirements for short-term psychiatric care and the longer term custodial care usually provided in the state mental institutions and other types of mental hospital facilities. A ratio of 5 beds per thousand of population has been accepted as representing the need for all types of nervous and mental care. As regards short-term psychiatric care, the experience of a number of communities suggests that at least 10 to 12 per cent of the total beds required could well be short-term in character. Taking these factors into account, we estimate the need for this phase of psychiatric care will be 65 beds by the year 1965, a ratio of 0.58 beds per thousand of population. By the year 1980, the need is expected to increase to 140 beds for such care, a ratio of 0.74 per thousand. The increase in ratio of need in these intervening years anticipates that there may be more demand for, and utilization of, such short-term facilities.

b - Available Beds and Shortages

At the present time there are approximately 30 beds estimated to be serving the residents of the Middlesex area. These are located in the Connecticut State Hospital and in Elmcrest Manor, a private psychiatric institution, both of which hospitals are located within the area. The beds which we have estimated to be so available are

only those which are considered serving area residents and providing such short-term care. Both of these hospitals serve very large areas, and therefore many of their patients, in fact the great majority, are not local in character. Of these 30 beds estimated to be available, 10 are located in non-fire-resistive facilities which should be replaced at some future date and therefore considered as not being available after the year 1965. On this basis, and if no additional beds were supplied, shortages could be expected to reach 35 beds by the year 1965 and 120 by the year 1980.

4 - Chronic Illness (long-term) Care

a - Description of Chronic Illness

The term "chronic illness" is generally applied to one resulting from a disease of relatively long duration. Such diseases account for well over 70 per cent of all deaths and a major portion of all permanent disabilities.

Although chronic diseases are no respecter of age, the highest rates of incidence do occur among those people over 45 years of age. Such illness is six times as prevalent among persons of 45 years of age and above as among those under 45. Hence, the largest volume is in the old age group. To these must be added those persons who are prematurely aged, and others who have residual physical disability.

Due to the long duration and disabling features, the occurrence of such illness creates a severe family problem involving medical, social, and economic factors. As the average life span lengthens, the proportion of older people increases rapidly. In 1950, the number of persons over 45 years of age in the United States was 28.5 per cent of the total population. By 1975, it is estimated that this

proportion will increase to approximately 35 per cent. As already pointed out, the Middlesex area has a higher proportion of its population in the upper age brackets than does the country as a whole. Even though continued immigration of new population may tend to hold down the proportion in the upper age brackets, the total number of such people can be expected to increase steadily in the years ahead; hence, the area will face a major community problem in providing adequately for the care of such persons.

b - General Outline of Care Needed

While chronic illness usually requires a long hospital stay, after the initial phase the remainder of the stay normally requires very little active medical treatment. At some stages, the patient requires nothing more than custodial care and a substitute for a home. Patients in need of chronic care can be generally classified into three major groups:

Class A - Those requiring intensive medical care for diagnosis and treatment

Class B - Those requiring primarily skilled nursing care

Class C - Those requiring mainly custodial or attendant care.

However, the individual patient may, and frequently does, go from one classification requirement to another at irregular periods of varying lengths. In addition, those with residual disabilities often require extensive periods of rehabilitation to regain adjustment to community living with their new handicaps. Not all chronically ill patients will require, or wish to receive, treatment in institutions. Experience indicates that, given a preference, patients would almost invariably prefer care in a good home of their own to entering any

institution. Whether or not the patient can do this is usually dependent upon his need for, and the availability of, housekeeping service and certain professionally specialized services on a visiting basis such as medical attention, nursing care, nutrition and diet consultation, and physical therapy. The importance of community service to bring such specialized care into the patients' own homes should certainly be borne in mind and developed in the future, as feasible. Granted, a program of this character involves considerable community effort, substantial funds, and wide public education to gain acceptance, and we are not unrealistic enough to think that this can be accomplished merely by the saying. However, we do believe it is worth the effort since this type of community investment, undoubtedly, can help avoid much greater capital and operating expense in future years.

c - Bed Requirements, Available Facilities, and Shortages

No community in this country has yet been willing to face the full impact of the chronic disease and old age problem. Therefore, no one really knows how many institutional beds are actually needed.

However, if we use general criteria, based on invalidism, age of the population, and the experience of other communities, it will afford a general perspective. Conservatively, we have estimated that the Middlesex area will require 560 beds for all types of chronic and long-term care by the year 1965. This would be a ratio of 5 beds per thousand of population estimated to be in the area at that time. This need will have to be met in chronic hospital units, nursing homes, and domiciliary facilities such as homes for the aged. It is the need for chronic hospital beds with which this study is

actively concerned, since an evaluation of nursing and domiciliary home needs, available facilities and shortages was outside of the scope of this study. Again, we know of no accurate method by which a proper division of the needs can be made between the various types of facilities described. We do know that experience in some communities is beginning to demonstrate that the need for hospital beds for chronically ill is perhaps not as great as had originally been anticipated. Conservatively, then, we estimate that by the year 1965 the area will require 100 hospital beds for the active treatment of the chronically ill, or a ratio of 0.89 beds per thousand of population. The remaining 460 beds of the total need described would have to be provided in other institutional facilities. By the year 1980 we estimate that the need for hospital beds for the chronically ill may reach 190, a ratio of approximately 1.00 per thousand. This represents an increase in the ratio of need over the 1965 estimate, reflecting what we believe will be an increased demand due to continued aging of the population.

At the present time there are no hospital beds for care of the chronically ill being operated in the area. It is estimated that approximately 35 such beds, located in institutions outside of the area, may be available to area residents. On the basis of this estimated supply, and if no new beds were added, expected shortages would be 65 chronic hospital beds by the year 1965 and 155 by the year 1980.

Even though this study is not actively concerned with the nursing home and domiciliary phases of chronic illness care, an estimate at this point of possible shortages in the immediate future may be

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Even though this study is not actively concerned with the nursing home and domiciliary phases of chronic illness care, an estimate at this point of possible shortages in the immediate future may be

helpful for perspective purposes in view of the plan proposed in the following pages of the report. At the present time there are approximately 461 nursing home beds in operation in the area. More than half of these (258) are considered unsuitable for continued use, and therefore needing replacement according to the latest inventory made by the State Health Department in the Connecticut State Plan. It appears, then, that there will be need for at least 257 more beds of this character by the year 1965. No attempt is made here to estimate the extent of shortages for such beds by the year 1980. This should be a matter of continued study in the years ahead, as more experience is gained.

5 - Tuberculosis Care

This study has not made any estimate of the bed requirements for tuberculosis care. Every evidence points to a declining need for such beds in Connecticut, with the result that a number of hospital facilities throughout the state which were originally intended to provide tuberculosis care are now being converted to other types of care. From this, we conclude that there is no indicated shortage of such beds. Furthermore, in the light of present medical knowledge and methods of treatment, we do not anticipate that additional need will arise within the period of this plan. The function of the area's hospitals in this regard should be primarily one of providing temporary care for patients with tuberculosis until they can be transferred to the proper institution intended for that care.

6 - Other Types of Care

In our opinion, there will be no need for the area to supply beds separately for other types of care such as communicable diseases, convalescent care of acute illnesses, and the like. The number of beds already described as being needed, if provided, should be more than adequate to take care of these other phases of patient illnesses during the period of the proposed plan. We believe that these special types of care can be satisfactorily handled within existing nursing units. As an illustration, proper planning for future hospital construction should make it possible to provide for communicable disease care on selected nursing units by the use of adequate facilities and equipment to insure proper isolation techniques.

C - The Need for Outpatient Services

Not all illnesses or their treatment require admission to a hospital bed for the necessary care. Many can be handled on an ambulatory basis in one or more of several ways. These include visits and treatments by physicians and/or other professional personnel to the patient in his own home; visits by patients to individual doctors' offices; visits to outpatient departments of hospitals for diagnosis and treatment in organized clinics, for emergency treatments, and for diagnostic X-ray and laboratory services; visits to public health clinics operated by governmental health units, welfare agencies, etc.; and visits to industrial health departments.

There is no universally accepted method for measuring accurately the amount of outpatient medical care people require. Programs for such care apparently have always been developed empirically. Regarding outpatient care by hospitals, with which this study is primarily concerned, we believe general hospitals should render outpatient service at least in the form of emergency

treatments and diagnostic examinations and treatments such as X-ray and laboratory. The extent to which they may go beyond this, and provide a more formally organized service with regularly scheduled clinics, will depend largely upon the needs of the hospitals' patients and their physician and, even more importantly, upon the need for such clinic services for educational purposes. From the patients' point of view, greater availability and use of outpatient services might well provide the means of reducing costs of care to individual patients. Also, substantial savings in capital investments for inpatient facilities might be effected in the years to come. From the doctors' point of view, the development of an organized outpatient clinic service is a valuable adjunct in the further education of young physicians serving their internships and residencies. The standards by which official approval is granted hospitals for their intern and residency programs place increasing emphasis on organized outpatient service (including clinics) as an integral and necessary part of medical education.

The emergency and diagnostic treatments and examinations described earlier are already being provided in the area. As the area grows, and as additional hospital facilities become available, the scope of outpatient services provided will necessarily need to be increased. In our opinion, it will probably be desirable to establish organized clinic services at least at one of the hospitals for reasons previously described.

D - Educational Needs

Physical facilities will not alone produce an effective program of hospital care. There must also be an adequate supply of physicians and paramedical personnel to staff these facilities. Although measurement of need for such professional skills is outside the scope of this study, it is pertinent to include here a brief statement of the probable need for educational

programs in the area as one means of supplying these needs.

To maintain an adequate supply of physicians, the Middlesex area will have to continue to rely on its ability to attract them from other areas. There is no indicated need for educational activity in this regard except for intern and resident physician training. At the present time, Middlesex Memorial Hospital is conducting intern and resident physician training on a somewhat limited basis by affiliation with Yale University School of Medicine. In the future, as the hospital grows to meet the increased requirements of the area, it will undoubtedly prove desirable to try and expand this program as much as is possible.

As regards meeting the need for paramedical personnel, Middlesex Hospital is now conducting an approved School of Professional Nursing and an approved program in medical technology. Again, as the hospital increases in size, there will probably be need to enlarge these two programs, and the hospital might very well give consideration to establishing an additional program in X-ray technology.

The important thing here is to call attention to the possibility of such needs, so that they may be held in mind at various stages of hospital planning.

III - A Plan to Meet the Described Needs

A - Introduction

As pointed out in the preceding Chapter II, the plan of hospital development undertaken in the area should be centered around the general hospital as the keystone of a total program of health and hospital care. Accordingly, our study places first emphasis on meeting the area's need for acute general hospital facilities in the years ahead.

Up to the present time these acute general needs, so far as patients treated within the area are concerned, have been met primarily in one hospital, the Middlesex Memorial in Middletown. A second, small, privately owned institution, Crescent Street Hospital in Middletown, is meeting the needs in a limited way. However, it serves primarily the requirements of an individual practitioner and his patients. For reasons described later in the report (A Plan for Each Hospital), we have anticipated this hospital will not be needed in the years ahead, and have therefore excluded it from our subsequent considerations.

Consideration as to how best to meet the area's future general hospital requirements raises the question: Can this continue to be done in one principal hospital as at present? So far as the described facility needs are concerned the answer is probably yes, since even by the year 1980 these needs would not be too great for one properly planned hospital to manage. However, this is not the only factor to be considered.

Earlier in the report we called attention to an apparent lack of cohesiveness between the northern and southern parts of Middlesex County (which comprises essentially all of the area) and to the reasons for it. Because of this, and in view of the anticipated rapid growth in the southern part of

the county, we found an increasing sentiment for the establishment of a second hospital in that section. If, as now seems probable, securing the capital funds needed for future hospital expansion should be done on some county-wide basis - these desires regarding a new hospital cannot be overlooked. Consequently, before attempting to propose a hospital plan for the area, we have considered alternate plans of meeting the needs in one hospital and in two hospitals and have weighed carefully the advantages and disadvantages of each. The various plans assume that the total number of beds needed by 1965 for acute general care will be provided. This would be 285, exclusive of the 29 beds anticipated to be continued in the present Crescent Street Hospital. As regards a second hospital, in the southern part of the county, we have estimated such a hospital might attract a sufficient volume of patients within the next three or four years to satisfactorily maintain 50 beds.

A resume of each plan considered, the capital costs involved, and the principal advantages and disadvantages of each appears on the following pages.

B - Alternate Plans for General Hospital Development

1 - Description of Each Plan

Plan #1 - Continue to Operate One General Hospital at Present Middlesex Memorial Site

This plan anticipates provision of all additional acute general facilities needed by 1965 by expanding Middlesex Memorial Hospital at its present site. Such expansion would require new construction to replace existing, outmoded facilities (76 beds and some services) and to provide additional facility needs of 117 beds and services. As a result, Middlesex Memorial Hospital would be enlarged to a capacity of 285 beds all for acute general care.

Estimated capital cost of this plan at today's prices: \$5,200,000.

Major advantages and disadvantages of this plan are:

Advantages:

- a) Lowest initial capital investment of the four plans considered.
(This advantage could be lost in long-range future due to probable necessity of further replacements and additional remodeling when construction costs may be higher.)
- b) Greater economy of operation, than possible in two hospitals, by avoiding unnecessary duplication of facilities and personnel. Conservatively could save \$50,000 per year of the total cost involved in operating two independent hospitals offering same basic, routine services.

(Note: Operating a second hospital as branch of Middlesex

Hospital would save money over independent operation. Even then, operation of only one hospital could save at least \$25,000 per year of the total cost of operating two hospitals.)

- c) Better opportunity to afford specialized patient care services in the area. The greater the volume of such care concentrated in one hospital the lower will be the unit cost.
- d) Better opportunity for stronger educational programs (especially interns and resident physicians) and for research. The larger the hospital the better it can compete with other hospital centers and afford such activities.

Disadvantages:

- a) Does not recognize desires of people in south end of the county and will not serve their needs as well so long as transportation remains as difficult as at present.
- b) Satisfactory expansion of present Middlesex Hospital plant very difficult. Badly needed replacement of existing outmoded facilities would seriously disrupt hospital operations or probably require extra capital cost for temporary housing of these facilities during period of replacement.
- c) Expansion possibilities at present site are limited. Even though additional land in the immediate vicinity might be acquired, orientation of existing buildings (to be retained) in relation to such additional land is poor.
- d) Operating costs of this hospital (expanded at the present site) would undoubtedly be greater than the operating costs of a new, properly integrated hospital of the same size due to perpetuation of unsatisfactory and uneconomic design in existing facilities retained. This excess cost is estimated to be \$30,000 to \$40,000 annually. It would continue, at least until all existing facilities had been replaced.

- e) In long-range future, total capital investment required to further expand present Middlesex Hospital may be higher than that of similar expansion of a new hospital at a new site. Further needed replacement and remodeling at existing site could come at a time when construction costs were higher.

Plan #2 - Operate One General Hospital (Middlesex Memorial) at a New Site

This plan anticipates the construction of a new Middlesex Hospital of 285 acute general beds at a new site to meet the needs for such care by 1965. Usable portions of the existing hospital buildings at the present site could then be converted, at relatively low cost, to some other type of care or to another kind of service.

Estimated capital cost of this plan at today's prices: \$6,495,000.

Note: Does not include any cost for conversion of usable portions of existing hospital buildings.

Major advantages and disadvantages of this plan are:

Advantages:

- a) Best opportunity for economy of operation of any plan. As described in Plan #1, could save \$25,000 to \$50,000 per year over cost of operating two hospitals (the amount depending on whether second hospital operates as a branch of Middlesex). In addition, operating a single hospital in new, properly integrated facilities of economic design could save \$30,000 to \$40,000 per year over operating an expanded hospital at the present Middlesex site which would continue some of the less efficient existing building structures for a number of years at least. Total operating savings under this plan could reach \$90,000 per year and probably would not be less than \$55,000 per year.

- b) Probably would involve lowest total capital investment of any plan in future years due both to ease of expansion of a new, properly designed hospital and concentration of all facilities in a single unit.
- c) Better opportunity to afford specialized services in the area if concentrate hospital program in one institution.
- d) Better opportunity for stronger educational programs (especially interns and resident physicians) and for research if concentrate hospital care in one institution. The larger the hospital the better it can compete with other hospital centers and afford such activities.
- e) Area could gain additional facilities at low cost at present Middlesex site for some other type of care or another kind of service.

Disadvantages:

- a) Does not recognize desires of people in south end of the county and will not serve their needs as well so long as transportation remains difficult.
- b) Represents higher initial capital investment than Plans #1 or #3.

Plan #3 - Operate Two General Hospitals; Expanded Middlesex Memorial at Present Site and New Hospital in the South End of the County

This plan anticipates providing the additional acute general facilities needed by 1965 by expanding Middlesex Memorial Hospital at its present site and by constructing a new general hospital in the south end of the county to serve the needs of residents there. Under this plan, Middlesex Hospital would undertake new construction to replace existing

outmoded facilities (76 beds and some services) and to provide additional facility needs of 67 beds and services. As a result, Middlesex Hospital would be enlarged to a capacity of 235 beds, all for acute general care. The proposed new hospital would be constructed with a beginning capacity of 50 beds, all for acute general care.

Estimated capital cost of this plan at today's prices:

Expansion of present Middlesex Hospital	\$4,610,000
New 50-bed hospital - south end of county	<u>1,585,000</u>
Total	\$6,195,000

Note: If new hospital was operated as a branch of Middlesex Memorial, capital cost could be reduced by approximately \$200,000.

Major advantages and disadvantages of this plan are:

Advantages:

- a) Recognizes desires and needs of people in the south end of the county. Therefore, should have stronger appeal if fund raising is undertaken on a county-wide basis.
- b) Second lowest initial capital investment. (This advantage may be partially lost in future due to possible higher cost of long-range expansion of Middlesex Hospital, as described in Plan #1.

Disadvantages:

- a) Plan of two hospitals would result in greater operating costs due to unavoidable duplication. This excess would be approximately \$25,000 per year if new, second hospital is operated as a branch of Middlesex; \$50,000 per year if it is an independent hospital.
- b) Two-hospital plan would lessen strength of major unit (Middlesex) in affording specialized service and in developing educational programs and research activities.

Plan #4 - Operate Two General Hospitals; New Middlesex Hospital at New Site and New Hospital in the South End of the County

This plan anticipates the construction of a new Middlesex Hospital of 235 acute general beds at a new site and a new 50-bed acute general hospital in the south end of the county. Together, these two new hospitals would provide 285 beds to meet the needs for acute general care by 1965. Usable portions of the existing Middlesex Hospital buildings at the present site could then be converted, at relatively low cost, to some other type of care or to another kind of service.

Estimated capital cost of this plan at today's prices:

New 235-bed Middlesex Hospital at new site	\$5,610,000
New 50-bed hospital - south end of county	<u>1,585,000</u>
Total	\$7,195,000

Note: If new hospital in south was operated as a branch of Middlesex Hospital, capital cost could be reduced by approximately \$200,000.

Note: Above cost figures do not include any cost for conversion of usable portions of existing Middlesex Hospital buildings.

Major advantages and disadvantages of this plan are:

Advantages:

- a) Recognizes desires and needs of people in the south end of the county. Therefore, should have stronger appeal if fund raising is undertaken on a county-wide basis.
- b) Better opportunity for operating economy than under Plan #3. Operating Middlesex Hospital in new, properly integrated facilities of economic design could save \$25,000 to \$30,000 per year over continued operation of an expanded, less efficient hospital at the present site.

- c) As in Plan #2, future expansion of new Middlesex Hospital would be easier and less costly than similar expansion of the present hospital.

Disadvantages:

- a) Involves highest immediate capital cost of any plan. Some of this would be offset in future years due to ease and economy of expanding a new Middlesex Hospital at a new site.
- b) Operation of two hospitals, under this plan, more costly than operation of a single, new Middlesex Hospital described in Plan #2.

2 - Summary Comparison of Alternate Plans

For easier perspective there is presented on the following page a brief summary of each of the plans described, including estimated capital costs.

<u>Description</u>	<u>Estimated Capital Cost</u>
Plan #1 - One hospital, 285 acute general beds, at present Middlesex Memorial site. Involves replacing 76 existing beds and some services and adding 117 beds and services. Total of 193 beds (plus services) constructed.	\$5,200,000
Plan #2 - One hospital, 285 acute general beds, new Middlesex Memorial at new site. Total of 285 beds (plus services) constructed.	\$6,495,000
Plan #3 - Two hospitals. One hospital, 235 acute general beds, at present Middlesex Memorial site; involves replacing 76 existing beds and some services and adding 67 beds and services. One new hospital, 50 acute general beds, south end of county. Total of 193 beds (plus services) constructed.	\$6,195,000
Plan #4 - Two hospitals. One new Middlesex Hospital, 235 acute general beds, at a new site. One new hospital, 50 acute general beds, south end of county. Total of 285 beds (plus services) constructed.	\$7,195,000

In comparing the various plans there is one other element for consideration at this point. This was touched on in Plans #2 and #4 but not evaluated in terms of capital investment involved. As noted, if Middlesex Hospital should build a totally new unit at a new site, the usable parts of its present hospital building could then be made available for some other type of care or service. Probably the most realistic possibility would be some phase of chronic illness care. The building structure would lend itself very well, we believe, to a nursing home type of care. The estimated cost of remodeling to achieve this (at today's prices) would be in the neighborhood of \$300,000. This would make available approximately 120 beds for such care. The cost of providing a similar number of beds for nursing home care in a new unit of first class construction would approximate \$900,000 (at today's prices). These costs were not included in previous comparisons since the community would not necessarily have to construct new nursing home facilities at the same interval of time it would be expanding the present Middlesex Hospital. On the other hand, if a new Middlesex Hospital is constructed at a new site, these existing facilities become almost immediately available for the nursing home care. These could be secured at some \$600,000 less investment than would be required for their provision in a new comparable unit.

To show what this means to the community as an added "bonus," the tabulation on the following page sets forth the cost of each plan adjusted to include the cost of 120 beds for nursing home care of the chronically ill.

C - Proposed Expansion Program

1 - Acute General Care

After careful study of the alternate courses of action described in the immediately preceding section, we have concluded that the best interests of the greatest majority in the area will be served by the establishment of a second, general hospital, which will share with Middlesex Memorial Hospital the responsibility for meeting the described future needs for acute general care. We propose that this second hospital be established in the immediate program (by the year 1965). In order to avoid all possible unnecessary duplication of facilities and personnel, and to secure maximum economy of capital investment and operation possible under such a plan, we urge that this second hospital be operated as a branch of the present Middlesex Hospital.

In arriving at this conclusion, we have not been unmindful of the several strong advantages of continuing to operate one hospital as opposed to two (this discussion does not concern the Crescent Street Hospital). The greater opportunities possible in a single hospital plan, the savings in operating costs and for developing more extensive specialized services, educational programs, and possible research activities, with the obvious benefits to patient care cannot be dismissed lightly. On the other hand, there are convincing factors to the other side of the picture. The very difficult transportation problem which now exists, due to poor highway systems between the north and south ends of the county, apparently will not be solved until sometime after 1965, when a new, express-type highway will be completed from Middletown to the south part of the county. Moreover, in the long-range program it appears that the southern sector will attain sufficient growth to properly support an

institution of moderately economical size. And if this second hospital is operated as a branch of the Middlesex Memorial Hospital, many of the disadvantages of duplication can be minimized. Consideration of these factors, together with a seemingly certain need for fund raising on a county-wide basis (including in all probability public funds) led to this decision of proposing the second hospital.

It is well to point out here that during the survey, consideration was given to the possible need for establishing other hospital units at some stage of the proposed plan and in other sections of the county, especially on the east side of the Connecticut River. After careful study, we have concluded that there will not be, within the period of this plan, a sufficient concentration of population outside of Middletown and its immediately surrounding areas and the described southern sector of the county, to adequately support such an additional institution. One argument advanced for the possibility of creating a hospital on the east side of the river is the possibility that the bridges across the river might be knocked out in the event of an attack during a period of war. While this might be true, we do not feel that it is wise to plan the peace-time development of hospitals on such an uncertain possibility. Moreover, residents of this part of the county and area can, with only 15 or 20 minutes added driving time, reach hospitals in other centers such as Hartford, Willimantic, Norwich, or New London.

In accordance with this described plan, we propose that there be constructed in the area, by the year 1965, additional facilities to provide 285 new beds for acute general care, of which 168 will replace existing beds in accordance with the following plan described for each hospital. This expansion will give the area a total of 314 beds for

acute general care by that time.

Between the years 1965 and 1980, we propose that there be constructed in the area, additional facilities to provide 290 new beds for acute general care, of which 29 will be replacements of existing facilities. This long-range expansion will give the area 575 beds for acute general care by 1980.

2 - Other Types of Care

We are not proposing the construction of any additional facilities for psychiatric or chronic hospital care in the area by the year 1965. So far as psychiatric care is concerned, the plan does anticipate that by this time at least 10 more beds for short-term care might be made available in the Connecticut State Hospital. So far as chronic care is concerned, the plan anticipates that possibly an additional 30 beds for the hospital phase of such care may be made available in chronic hospitals located outside of the area.

Between the years 1965 and 1980, the plan proposes the construction or provision of 110 new beds for psychiatric care, of which 10 will be replacements, in accordance with the recommendations for the individual hospitals appearing in the following section of the report. This will give the area a total of 140 beds for short-term psychiatric care by that time.

Also, between the years 1965 and 1980, the plan proposes the construction or provision of 125 new beds for chronic care, of which 75 are beds anticipated to be made available in chronic hospitals located outside of the area and 50 are beds recommended for construction within the area. These additional beds will give the area a total of 190 for the hospital phase of chronic care by the year 1980.

D - A Plan for Each Hospital

The accompanying Table II on the following page sets forth, by type of care, by hospital, and by years, the proposed construction plan for meeting the area's need for the various types of care described. Immediately following appears Table III which indicates the existing and proposed distribution of acute general beds by hospital and by type of medical care. Following this, a description of the expansion program recommended for each hospital in the area is given.

A word of caution should be added at this point about the long-range bed programs proposed for each of the hospitals between the years 1965 and 1980. These proposals are based on the best judgment and knowledge applicable at this time. However, continued advancements in medical science and further changes in methods of practice and treatment, or unforeseen changes in population growth may make adjustments necessary in the plan of each of the hospitals. Therefore, we recommend that before the long-range program is carried out, the hospitals review carefully the proposals which have been made in light of the knowledge then prevailing. It will be noted, also, that we have not set up a time schedule for the provision of additional facilities recommended between 1965 and 1980. Probably this will need to be accomplished in two steps, one of these shortly after 1970 and the other about 1975 or 1976. Again, we urge that this be a matter of continuing study as the whole hospital program and the area develops.

TABLE II

Middlesex Area, Connecticut

PROPOSED BED CONSTRUCTION PLAN

By Type of Care - By Hospital - By Years

Hospital	(1) Bed Require- ments 1965	(2) Exist- ing Beds 1958	(3) Less Beds to be Replaced by 1965	(4) 1958 Beds Retained by 1965	(5) New Beds Needed by 1965	(6) Recommended Construc- tion by 1965	(7) Total Beds Proposed by 1965	(8) Long-range Unmet Needs from 1965	(9) Program - Beds to be Replaced by 1980	(10) Years - Additional Require- ments 1965-1980	(11) Total Construc- tion 1965-1980	(12) Bed Require- ments 1980
Total Beds - All Types of Care	479	262	168	94	385	325	419	60	39	426	525	905
Connecticut State Hospital a/	30	20	-	20	10	10	30	-	-	50	50	80
Crescent Street Hospital	29	29	-	29	-	-	29	-	b/	-	-	-
Elmcrest Manor a/	10	10	-	10	-	-	10	-	10	15	25	25
Middlesex Memorial Hospital	295	168	168	-	295	235	235	60	29b/	211b/	300	535
Chronic Hospitals (Outside of Area)	65	35	-	35	30	30	65	-	-	75	75	140
Proposed New Hospital (Saybrook-Westbrook Area)	50	-	-	-	50	50	50	-	-	75	75	125
Total Beds - Acute General Care	314	197	168	29	285	285	314	-	23	261	290	575
Crescent Street Hospital	29	29	-	29	-	-	29	-	b/	-	-	-
Middlesex Memorial Hospital	235	168	168	-	235	235	235	-	29b/	186b/	215	450
Proposed New Hospital (Saybrook-Westbrook Area)	50	-	-	-	50	50	50	-	-	75	75	125
Total Beds - Psychiatric Care	65	30	-	30	35	10	40	25	10	75	110	140
Connecticut State Hospital a/	50	20	-	20	10	10	30	-	-	50	50	80
Elmcrest Manor a/	10	10	-	10	-	-	10	-	10	15	25	25
Middlesex Memorial Hospital	25	-	-	-	25	-	-	25	-	10	35	35
Total Beds - Chronic Care	100	35	-	35	65	30	65	35	-	90	125	190
Chronic Hospitals (Outside of Area)	65	35	-	35	30	30	65	-	-	75	75	140
Middlesex Memorial Hospital	35	-	-	-	35	-	-	35	-	15	50	50

a/ Beds shown for Connecticut State Hospital and Elmcrest Manor are only those estimated to be providing short-term, noncustodial care to area residents.

b/ Plan anticipates Crescent Street Hospital may discontinue operation sometime after 1965 (see text). Hence, existing beds at this hospital assigned as replacements to long-range program of Middlesex Memorial Hospital.

Note: Column (5) = (1) less (4); Column (7) = (4) plus (6); Column (8) = (1) less (7); Column (9) 1965 beds proposed to be replaced by 1980 for reasons described in text; Column (10) = (12) less (1).

TABLE III

Middlesex Area, Connecticut

EXISTING AND PROPOSED DISTRIBUTION OF ACUTE GENERAL BEDS

By Hospital - By Type of Medical Care - By Years

Type of Medical Care	Total All Hospitals	Hospital		
		Crescent Street	Middlesex Memorial	Proposed New Hospital
<u>Total Existing Beds</u>	<u>197</u>	<u>29</u>	<u>168</u>	<u>-</u>
Medicine and Surgery	140	21	119	-
Obstetrics	37	8	29	-
Pediatrics	20	-	20	-
<u>Total Beds Proposed by 1965</u>	<u>314</u>	<u>29</u>	<u>235</u>	<u>50</u>
Medicine and Surgery	216	21	165	30
Obstetrics	63	8	40	15
Pediatrics	35	-	30	5
<u>Total Beds Proposed by 1980</u>	<u>575</u>	<u>-</u>	<u>450</u>	<u>125</u>
Medicine and Surgery	400	-	320	80
Obstetrics	110	-	80	30
Pediatrics	65	-	50	15

Connecticut State Hospital

This is an existing state-owned hospital providing primarily long-term custodial care to the mentally ill. The survey makes no specific recommendations concerning this hospital's future development since its program of care is essentially a state responsibility and is expected to continue to be met by the state. The study does, however, anticipate the possibility that this hospital may supply area residents with approximately 10 additional beds by 1965 for short-term psychiatric care which, added to those estimated to be currently available, will provide the area with 30 such beds in this hospital.

Between the years 1965 and 1980, the study anticipates that this hospital might make available an additional 50 beds for short-term psychiatric care providing a total of 80 such beds to area residents by the year 1980.

Crescent Street Hospital

This is an existing small general hospital of 29 beds, serving primarily the needs of one practitioner and his patients. The survey proposes no expansion of this hospital by the year 1965.

Between the years 1965 and 1980, it is anticipated that this hospital may no longer be needed by the practitioner now involved, and may therefore discontinue operation. Accordingly, it is proposed that its 29 beds be assigned as replacements to the long-range expansion program of Middlesex Memorial Hospital.

Elmcrest Manor

This is an existing privately-owned hospital of 50 beds, providing both short and long-term psychiatric care. It is estimated that approximately 10 of its beds are available to area residents for short-term psychiatric care. No recommendation is made for the expansion of this hospital by the year 1965.

Between the years 1965 and 1980, we recommend that this hospital construct a new facility of 75 beds to replace its existing hospital unit, which is already over 100 years old and non-fire-resistive, and to provide 25 additional new beds. Of the total 75 beds which would be available after this expansion, 25 are estimated to be available for area residents for short-term psychiatric care.

Middlesex Memorial Hospital

This is an existing, nonprofit general hospital of 168 beds, all of which are operated for acute general care.

We recommend the following program:

By the year 1965 this hospital should move to a new site and construct an entirely new unit of 235 acute general beds. We suggest that the new site be selected in an area farther out of Middletown (possibly to the south, near the junction of State Highway 155 and the new State Highway 9) where adequate land, preferably 20 acres, can be secured. However, no matter what area is finally chosen, the site should remain accessible to adequate sewer and water facilities.

The proposal for this move anticipates that the existing School of Nursing facilities will be retained at the present site for the time being, and that the students will be transported between the two sites as necessary. We recognize this will involve some extra work and probably added operating cost temporarily. However, it does not appear feasible to add the cost of replacing these nursing school facilities to the total cost of the program proposed for the immediate

future by 1965. Necessary expansion of nursing school facilities, already indicated, could be accomplished on a temporary basis in other buildings remaining at the present site.

After the move is made to the new site, the usable portion of the existing hospital buildings could then be converted to a nursing home for the care of the chronically ill providing approximately 120 beds, or less if a portion of the buildings were used temporarily for some School of Nursing activity. This nursing home could be operated either by Middlesex Hospital or by another agency, depending on which appears the most desirable procedure at the time.

In making this recommendation concerning a totally new hospital unit, we appreciate there is involved a replacement of 92 beds and several important services now housed in usable facilities. However, even an expansion program at the present site would require very substantial replacements of facilities (76 beds in some services) now housed in outmoded, non-fire-resistive structures. Even after this were done, the hospital would not have facilities nearly as efficient or economical to operate as in a totally new unit. Moreover, future expansion at the present site would be limited because of the inadequacies of the site itself and the poor orientation of the usable portions of the existing buildings on this site. If, as we have proposed, nursing home facilities for chronically ill are established at the present site, the community would gain 120 additional beds at considerably less capital investment than would be necessary in comparable new construction. At the most, then, the community stands to lose no more than \$600,000 to \$700,000 in the immediate future by the plan we have proposed. In view of the sizable operating economy which could be achieved in a new hospital over an expanded existing one, this loss could undoubtedly be wiped out in a relatively short period of time. Hence, we believe that there is every ultimate advantage of a move to the new site, despite some higher initial capital investments.

Between the years 1965 and 1980, Middlesex Memorial Hospital should construct additional facilities at its new site to provide 300 new beds (215 acute general, 35 psychiatric, and 50 chronic) and to expand ancillary services as needed. Of the additional acute general beds, 29 would replace existing beds at Crescent Street Hospital anticipated to discontinue operation during this period of time. This expansion will give the hospital a capacity (by 1980) of 535 beds as follows: 450 acute general, 35 psychiatric, and 50 chronic. Also, during this interval, the hospital should construct new and expanded facilities at its new site for the School of Nursing. Usable portions of the existing nursing school facilities at the old site can be converted then to a home for the care of the aged.

Proposed New Hospital

We propose the construction of a new 50-bed acute general hospital, somewhere in the Saybrook-Westbrook area, by the year 1965. We strongly recommend that this new hospital be operated as a branch of the Middlesex Memorial Hospital. Under such a plan, administrative control of, and responsibility for, the new hospital's operation would be vested in the Middlesex Hospital authorities. In so doing, however, every effort should be made to assure that the governing organization of these two hospitals adequately represents all interests involved throughout the area.

This plan of joint operation anticipates that there would have to be maintained daily trucking service between the two units to provide properly for the desired centralization of services possible in such a plan of operation. Allowance for the cost of this trucking service was made before computing the possible operating savings (previously described) which can be secured by such joint activity.

Between the years 1965 and 1980, we recommend this new hospital be expanded to a capacity of 125 beds, all for acute general care, and that it continue to

operate as a branch of Middlesex Memorial Hospital. Because of the added volume of patient care resulting from the expansion of both hospitals, it should be possible to secure even greater economy of operation than might be expected in the initial program.

E - Estimated Capital Costs - Plan for the Immediate Future (by the year 1965)

The following tabulation, presented below, indicates by hospital unit a general estimate of the approximate cost of constructing and equipping the beds and ancillary services we have recommended be provided by the year 1965. It should be borne in mind these costs are a general estimate only. They are based on current construction cost data which we are advised now applies in the general vicinity in which the Middlesex area is located. They should prove adequate as a basis for decisions regarding the proposed plan. However, they do not and cannot reflect all possible changes which could occur between the present time and the period when the hospitals are ready to let contracts for the new construction. Hence, they should be checked carefully when the hospitals actually start planning for additions and when more accurate architectural programs can be prepared. The costs, while not presented in detail as to the element of expansion involved, do make proper allowance for new basic construction costs and for necessary equipment and fees and contingencies. They also include, where necessary, allowances for the cost of acquisition of land and for land improvement.

<u>Hospital</u>	<u>Estimated Capital Cost</u>
New 235-bed Middlesex Memorial Hospital at a new site	\$5,610,000
120-bed Nursing Home for chronic care - remodeled facilities at existing Middlesex site	300,000
New 50-bed hospital in Saybrook-Westbrook area (branch of Middlesex Memorial)	<u>1,385,000</u>
Total Cost	\$7,295,000

F - Implementing the Plan

The plan we have proposed offers a blueprint for the development of a coordinated program of hospital care in the Middlesex area. However, there still remains significant effort to achieve the described objectives, one which must continue throughout the years ahead. As an aid to such effort, we present here suggestions regarding possible sources of securing capital funds, establishing priorities of construction, and the possible development of a coordinating community organization.

1 - Sources of Capital Funds

The preceding estimates of construction costs indicate an expenditure of \$7,295,000 by the year 1965 for the new beds (both additional and replacements) and ancillary services if our recommendations are carried out. Between the years 1965 and 1980 the increasing hospital needs, due to a continually expanding population, will undoubtedly require expenditures several times greater than the initial one proposed above. While this study has no responsibility to recommend how these funds shall be secured, it does seem appropriate to comment here briefly on possible sources.

Seldom can capital investments of such magnitude be the responsibility of any one group alone, especially in today's economy. From our discussions with various community representatives in the area it appears reasonably certain that private endeavor could not provide all the necessary funds in time, even if it chose to do so. If this is so, it would appear necessary to turn to government for assistance. We are not in a position, without special study, to advise whether this should be done by local or state government or both, augmented by matching federal funds under the Hill-Burton program as these latter may be available.

Whatever the particular source, it would be possible if the people so chose, to finance the entire program proposed with such government funds. However, we believe the idea of some participation through voluntary giving should not be discarded completely. The development of two entirely new hospitals (if our proposed plan is carried out) presents many excellent opportunities for outstanding memorials which could have very strong appeal to a number of prospective donors, whether individual, special groups, or corporate. Therefore, we suggest serious consideration be given to a cooperative pattern of private endeavor, supplemented to the degree necessary by public funds.

One other thought should be kept in mind as regards securing the needed funds. To us, the most important thing is the adoption of a program which the majority of residents in various sections of the area can, and will, support. If this is achieved, it should be possible to determine a program of fund raising which is feasible of accomplishment.

2 - Priorities of Construction

To the degree that it will assist in maintaining some balance in the development of the proposed program, we suggest the following priorities for the construction projects recommended by the year 1965. First priority should be assigned to the program recommended for Middlesex Memorial Hospital, second priority to the proposed new branch hospital in the south end of the county, and third priority to the provision of nursing home facilities for care of the chronically ill at the present Middlesex site. It should be noted that the priority assigned the third project has meaning only so long as a new Middlesex Hospital can be built, or as the community might determine to construct an entirely new nursing home of comparable size and facilities at some other site. In arriving at